

## **RESPONSE TO THE OFFICE ACTION**

### **REMARKS**

**Remark 1.** The following paragraphs are amended to replace the published application [0040]-[0043] in the examiner's recommendations (action dated Sept 24, 2002).

A regular standard touchpad (200) is attached on the top of the said claimed handheld mouse body (Fig. 1 - Fig. 3). The mouse body is of the size slightly smaller than a user's palm so it can be hand held in a grasp grip position. With the four other fingers holding the mouse body in the grasp position, the thumb can make contact with the touchpad (200) in a natural position. The thumb can rest on the touchpad (200), stretch to make the mouse cursor move up, retract to make the mouse cursor move down and slide left/right to make the cursor move left/right.

The shape of the mouse body can be elliptic or credit card type. They should be fit comfortably into the user's palm. The size of the touchpad is smaller than the size of the housing hosting the mouse but should be large enough to allow some space for the thumb's movement.

Standard mouse buttons (201, 202, 203) are located in front of the touchpad and/or on the side of the touchpad. They should be easily and comfortably reachable/or rested upon by other fingers of the same hand of the user, which holds the mouse. Additional mouse buttons can be added to enhance functionality of the handheld mouse or provide shortcuts to software applications. But they are not necessary. Using the method disclosed in this invention, any mouse, existing or new, remotely connected or cable connected will be enabled to simulate the keyboard inputs.

Touchpad 200 is typically operated with a conductive device such as a stylus or finger. Touchpad 200 can be either a relative or an absolute cursor movement device used in microcomputer systems. The body of the mouse can be made of plastic materials. The mouse buttons (201, 202, and 203) can be made of the same type of materials as the mouse body.

The electronics and circuitry of generating mouse signals using touchpad are well known to any persons skilled in the art. The input signals are fed into computer either wired or remotely through standard mouse protocols such as Microsoft corporation's MS mouse standard, or International Business machines' Incorporated PS/2 mouse standard, or the Apple computer, Inc.'s Apple Desktop Bus or any other applicable computer input mouse protocol. The remote transmission of mouse

signals through IR, RF and Blue Tooth technology. The nature of the transceivers of IR, RF and Blue Tooth Technology should be well known to those skilled in the art and is not the subject of this invention.

**Remark 2.** In response to the detail action 5 dated Sept 24, 2002, the claims are now in one sentence only as required. The unmarked amended claims are duplicated below.

1. A computer mouse for manipulating by the right hand of a user to control the operation of a computer comprising:
  - a). mouse body fit into the palm of a user's right hand;
  - b). a mouse movement tracking mechanism , having a pressure sensitive touchpad occupying a portion of the mouse body, for producing contact data regarding the location information of user's thumb on the touch as mouse input signals, said touchpad being able to simulate keyboard inputs when a user touches on the touchpad surface by right thumb;
  - c). its associated hookup software, the said software residing on a user's computer connected with the said touchpad, being able to recognize mouse movements as keyboard input signals, based solely on mouse input signals;
2. The handheld unit of Claim 1 further comprising
  - a). a touchpad,
  - b). mouse buttons,
  - c). an optional holder to house the said mouse body when the said mouse is not handheld;
3. The handheld unit of Claim 1 being small enough to be hold comfortably in an operator's right hand in grasping grip;
4. The handheld unit of Claim 1 being of elliptic shape (Figure 1) with buttons located on the front of the said touchpad and/or on the side of the said touchpad, easily and comfortably locatable by other fingers of the user's same hand in grasping grip position;
5. The handheld unit of Claim 1 being credit card shape, with buttons located on the front of the said touchpad and/or on the side of the said touchpad, easily and comfortably locatable by other fingers of the user's same hand in grasping grip position;

6. The handheld unit of Claim 1 being able to be ergonomically operated solely by the user's right hand alone to input both mouse and keyboard information, with no need of user's eye focus on the said touchpad, thus being able to operate in the dark where the user being able to hold mouse while not being able to focus his eye sight on the said touchpad or mouse at all;
7. The handheld unit of Claim 1 wherein the said unit is connected to computer through regular cable; RF signals, IR signal and blue tooth technology;
8. The method that the said associated hookup software working as an interpreter between the said touchpad input signals and the computer operating system allows a user's thumb movement being recognized as either regular mouse signals or keystroke signals, with no additional need of any hardware except the said touchpad mouse, with no additional information except the mouse signal generated by the said touchpad;;
9. The method that the hookup software processing handwriting stroke's information without the need of gaining absolute locations of thumb movement signals generated from the said touchpad; using only traditional mouse information containing only relative movement signals;
10. The method that the additional part of the mouse, the base holder unit, is separated from the core moveable part, the handheld unit, allowing the flexibility of being used as handheld or as a regular touchpad mouse.

**Remark 3.** In response to the detail action 9-12 dated Sept 24, 2002, the references cited by the examiner have all been incorporated into the application. In view of these new references, the following paragraphs have been added to answer and address the novelty of our application. Particularly, the following references cited by the examiner on form PTO-892 are added to the references of the application.

5,805,144	Sep. 9, 1998	Scholder et al.	345/163
5,260,697	Nov. 9, 1993	Barrett et al.	345/173

5,355,148	Oct. 11, 1994	Anderson	345/166
6,392,637	May 21, 2002	Liao et al.	345/173
6,035,350	Mar. 7, 2000	Swamy et al.	710/73
6,219,037	Apr. 17, 2001	Lee	345/167

**Remark 4.** In response to the detail action 9-12 dated Sept 24, 2002, the following paragraph is added to address Lee's patent.

U.S. Pat. No. 6,219,037 (Lee) discloses a pointing device provided with two types of input means for a computer system, preferably a notebook (or portable) computer. This is accomplished by making the mouse removable from the portable computer. Since most mice attached to portable computers are fixedly mounted to the housing of the portable computer system, making the mouse removable from the portable computer provides a user the choice of using either track ball type mouse or touchpad mouse. The touchpad mouse when it is detached from the portable computer can also be used wirelessly when handheld. However, the touchpad or trackball mouse when handheld, is neither ergonomic nor is it capable perform keyboard functions. A handheld mouse, if unable to perform keyboard function, is ergonomically disadvantageous. A user would either have to hand held both a keyboard and a mouse to perform most necessary functions to communicate with computers.

**Remark 5.** In response to the detail action 9-12 dated Sept 24, 2002, the following paragraph is added to address Swamy et al's patent.

In a similar endeavor, U.S. Pat. No. 6,035,350 (Swamy, et al.) discloses a detachable I/O device with built-in RF/IR functionality to facilitate remote audio-visual presentations. The circuitry design is disclosed to incorporate the detachable I/O device into the system. No specific restriction is imposed on the type of the device. Track pad and trackball mouse are mentioned as examples. The design, has the same shortcoming as U.S. Pat. No. 6,219,037 (Lee). Specifically, (1) significant modification or special circuitry is required to incorporate the design into the system; (2) Multiple input/output devices are needed to communicate and control the computer effectively and ergonomically, especially when handheld.

**Remark 6.** In response to the detail action 9-12 dated Sept 24, 2002, the following paragraph is added to address Scholder et al's patent.

U.S. Pat. No. 5,805,144 (Scholder, et al.) discloses a pointing device and a method of providing movement data and position data with a mouse pointing device. The device combines a traditional mouse with a touchpad. With the traditional mouse providing movement information, the touchpad supplies additional information about possible positional data demanded by some applications to simulate analog-type commands. These commands are sometimes useful in graphic art design, multimedia and games, on-screen virtual slide-bars and virtual potentiometer-type control. These commands, even though can be executed already using the traditional mouse, might be accomplished more easily and ergonomically using the touchpad. The touchpad function thus is used to supplement the functions of traditional mice.

**Remark 7.** In response to the detail action 9-12 dated Sept 24, 2002, the following paragraph is added to address Barrett et al's patent.

U.S. Pat. No. 5,260,697 (Barrett, et al.) discloses a digitizing tablet overlaying a display screen. The system allows for the simulation of computer input devices such as a mouse and keyboard by a pen upon the digitizing touch tablet. The disclosed system provides for user operation of preexisting programs with a pointer-type device that the pre-existing programs were not designed to accommodate. This is accomplished by providing a separate user interface system consisting at least an interface processor that logically overlays, but does not interface with, the operation of the preexisting program. The interface processor is used to execute software that is needed to implement the interface. In addition to that, the display buffer has to be modified to incorporate the data outputted by the interface that performs the data combination. That is, additional hardware and hardware modification to the existing personal computer are required to implement the system. In summary, in order to make use of the disclosed digitizing tablet system, the user must reconfigure his/her personal computer. This is not feasible if not impossible unless user has to replace his personal computer system with the specialized designed computer system for the purpose of using the disclosed digital tablet input device. In addition, the system proposed is essentially a digital tablet. When a user has little time to focus on the tablet and the device has to be used in not well lit environments, push a simulated button on such a small tablet is infeasible.

**Remark 8.** In response to the detail action 9-12 dated Sept 24, 2002, the following paragraph is added to address Liao et al's patent.

U.S. Pat. No. 6,392,637 (Liao, et al.) discloses a method to divide a computer touchpad into multiple regions (or using multiple touchpads as input devices). With some touchpads can be used as configurable buttons. Using touchpad to simulate button functions has the advantage of illuminate the traditional mechanical mouse buttons.

**Remark 9.** In response to the detail action 9-12 dated Sept 24, 2002, the following paragraph is added to address Anderson's patent.

U.S. Pat. No. 5,355,148 (Anderson) discloses a fingerpoint mouse using photo-voltaic sensing cells rather than touchpads. By sensing the direction of the pressure applied by the figure using diode light, it translates the pressure into mouse movement. The fingerpoint mouse takes significant less space compared to a traditional touchpad. It is about the size of a trackball mouse button. In fact, it is similar to a trackball mouse. While the finger point mouse has a concave surface, a trackball has a convex surface design. Like a trackball mouse, the fingerpoint recommend, if handheld, is hard to operate ergonomically using one hand, if not impossible. To operate the disclosed finger point mouse using one hand, the base or housing should be held relatively steady, in addition, the finger that applies pressure to the mouse has to be flexible enough to move and rotate in all directions. This is apparently impractical. The finger mouse disclosed is thus not suitable to being a handheld mouse.

**Remark 10.** In response to the detail action 1 dated May 23, 2003, the references not cited by the examiner have been removed. See also **Remark 3**.

**Remark 11.** In response to the detail action 2 dated May 23, 2003, the drawings corrections are now highlighted (underlined for added texts).

**Remark 12.** In response to the detail action 3-6 dated May 23, 2003, all amendments have now complied with the requirement of 1.121(c).

**Remark 13.** In response to the detail action 7 dated May 23, 2003 regarding the format of "Response to the Office Action", (1) all amendments have now complied with the requirement of 1.121(c), (2) Remarks and arguments have now been presented in separate sheets at the end of the "Response to the last Office Action" under the heading of "REMARKS".